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10/691,032	10/22/2003	Weizheng W. Wang	PD-202088	7557

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THE DIRECTV GROUP INC
PATENT DOCKET ADMINISTRATION RE/R11/A109
P O BOX 956
EL SEGUNDO, CA 90245-0956

EXAMINER	
BENGHUZZI, MOHSIN M	
ART UNIT	**PAPER NUMBER**
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/691,032	WANG ET AL.	
	Examiner	Art Unit	
	Mohsin (Ben) Benghuzzi M.B.	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *October 27, 2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-24 are rejected under 35 U.S.C. 101 because they are not directed to a practical application. Independent claims 1, 9, and 17 merely contain a series of steps without concluding how the equalization of digital data signals as recited in the preamble is done.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 7-12, and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arslan et al. (US 6,574,235) in view of Smee et al. (US 6,522,683).

1) Regarding claim 1:

Arslan et al. teaches a method of equalizing digital data signals, comprising the steps of:

demodulating and decoding an input signal having input data to produce a data output (101B and 102B in Fig. 4B);

remodulating the data output to produce a pseudo-training sequence including an idealized input signal (103B in Fig. 4B, column 10 line 67 to column 11 line 2, wherein, block 103B is interpreted to perform the remodulation).

Arslan et al. does not teach, generating equalizer parameters from the pseudo-training sequence. However, Smee et al. teaches, generating equalizer parameters from the pseudo-training sequence (column 2 lines 9-15).

It is desirable for a receiver to generate its equalizer parameters from a pseudo-training sequence. Estimation of channel effects using a training sequence produces equalizer parameters that are more accurate, and thus, resulting in a more accurate reproduction of the transmitted signal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include generating equalizer parameters from a pseudo-training sequence, as Smee et al. teaches, in the equalization method of Arslan et al., in order to result in a more accurate reproduction of the transmitted signal.

2) Regarding claim 2:

Smee et al. teaches, wherein the step of generating equalizer parameters from the remodulated data output comprises the step of:

buffering the input signal (column 11 lines 32-33); and

comparing the buffered input signal to the pseudo-training sequence to produce the equalizer parameters (column 2 lines 35-40, wherein, 'tracks the changing characteristics' is interpreted as comparing).

3) Regarding claim 3:

Arslan et al. teaches the method of claim 2, wherein the step of demodulating and decoding an input signal having input data to produce a data output comprises the steps of:

recovering the carrier and timing of the input signal to produce a carrier and timing recovered signal (column 2 lines 12-14);

demodulating the carrier and timing recovered signal to produce a demodulated signal (101B in Fig. 4B); and

decoding the demodulated signal to produce a received data signal (102B in Fig. 4B).

4) Regarding claim 4:

Arslan et al. teaches the method of claim 3, wherein the step of remodulating the data output to produce a pseudo-training sequence comprises the steps of:

re-encoding the received data signal to produce a re-encoded signal (104B in Fig. 4B, column 10 line 67); and

remodulating the encoded signal to produce the training sequence (103B in Fig. 4B, column 10 line 67 to column 11 line 2, wherein, block 103B is interpreted to perform the remodulation).

5) Regarding claim 7:

Smee et al. teaches, wherein the input signal is equalized before being demodulated and decoded (column 2 lines 9-15, wherein, 'immediately following' is interpreted as before demodulated and decoded).

6) Regarding claim 8:

Smee et al. teaches, wherein the step of generating equalizer parameters from the remodulated data output comprises the steps of:

buffering the equalized input signal (column 11 lines 32-33); and

comparing the buffered equalized input signal to the remodulated data output to produce the equalizer parameters (column 2 lines 35-40, wherein, 'tracks the changing characteristics' is interpreted as comparing).

7) Regarding claim 9:

Arslan et al. discloses an apparatus for equalizing digital data signals, comprising:

means for demodulating and decoding an input signal having input data to produce a data output (101B and 102B in Fig. 4B);

means for remodulating the data output to produce a pseudo-training sequence including an idealized input signal (103B in Fig. 4B, column 10 line 67 to column 11 line 2, wherein, block 103B is interpreted to perform the remodulation).

As discussed in claim 1, Smee et al. discloses means for generating equalizer parameters from the pseudo-training sequence (column 2 lines 9-15).

8) Regarding claim 10:

Smee et al. teaches, wherein the means for generating equalizer parameters from the remodulated data output comprises:

means for buffering the input signal (column 11 lines 32-33); and

means for comparing the buffered input signal to the pseudo-training sequence to produce the equalizer parameters (column 2 lines 35-40, wherein, 'tracks the changing characteristics' is interpreted as comparing).

9) Regarding claim 11:

Arslan et al. discloses the apparatus of claim 10, wherein the means for demodulating and decoding an input signal having input data to produce a data output comprises:

means for recovering the carrier and timing of the input signal to produce a carrier and timing recovered signal (column 2 lines 12-14);

means for demodulating the carrier and timing recovered signal to produce a demodulated signal (101B in Fig. 4B); and

means for decoding the demodulated signal to produce a received data signal (102B in Fig. 4B).

10)Regarding claim 12:

Arslan et al. discloses the apparatus of claim 11, wherein the means for remodulating the data output to produce a pseudo-training sequence comprises:

means for re-encoding the received data signal to produce a re-encoded signal (104B in Fig. 4B, column 10 line 67); and

means for remodulating the encoded signal to produce the training sequence (103B in Fig. 4B, column 10 line 67 to column 11 line 2, wherein, block 103B is interpreted to perform the remodulation).

11)Regarding claim 15:

Smee et al. discloses, wherein the input signal is equalized before being demodulated and decoded (column 2 lines 9-15, wherein, 'immediately following' is interpreted as before demodulated and decoded).

12)Regarding claim 16:

Smee et al. discloses, wherein the means for generating equalizer parameters from the remodulated data output comprises:

means for buffering the equalized input signal (column 11 lines 32-33); and

means for comparing the buffered equalized input signal to the remodulated data output to produce the equalizer parameters (column 2 lines 35-40, wherein, 'tracks the changing characteristics' is interpreted as comparing).

13)Regarding claim 17:

Arslan et al. discloses an apparatus for equalizing digital data signals, comprising:

a demodulator for demodulating an input signal to produce a data output (101B in Fig. 4B);

a modulator, communicatively coupled to the demodulator, for remodulating the data output to produce a pseudo-training sequence including an idealized input signal (103B in Fig. 4B, and column 10 line 67 to column 11 line 2).

As discussed in claim 1, Smee et al. discloses, a parameter generation module, communicatively coupled to the modulator for generating equalizer parameters from the pseudo-training sequence (column 2 lines 9-15).

14)Regarding claim 18:

Arslan et al. discloses the apparatus of claim 17, wherein the input signal is coded, and the apparatus further comprises:

a decoder, coupled between the demodulator and the modulator, for decoding the demodulated input signal to produce the data output (102B in Fig. 4B); and

a coder, coupled between the modulator and the processor, for encoding the remodulated data output to produce the pseudo-training sequence (104B in Fig. 4B, wherein, the 'RE-ENCODER' is interpreted as the coder).

15)Regarding claim 19:

Smee et al. discloses, further comprising:

an equalizer, communicatively coupled to the input signal, the demodulator, and the parameter generation module (column 2 lines 9-15); and

a buffer, coupled between the input signal and the parameter generation module, for buffering the input signal (column 11 lines 32-33).

16)Regarding claim 20:

Smee et al. discloses, wherein the parameter generation module compares the buffered input signal to the pseudo-training sequence to produce the equalizer parameters (column 2 lines 35-40, wherein, 'tracks the changing characteristics' is interpreted as comparing).

17)Regarding claim 21:

Smee et al. discloses, further comprising:

an equalizer, communicatively coupled to the input signal (column 2 lines 9-15); and

a buffer, communicatively coupled between the equalizer and the processor, for buffering the equalized input signal (column 11 lines 32-33).

18)Regarding claim 22:

Smee et al. discloses, wherein the processor compares the buffered input signal to the pseudo-training sequence to produce the equalizer parameters (column 2 lines 35-40, wherein, 'tracks the changing characteristics' is interpreted as comparing).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Li et al. (US 7,161,931) discloses a system with a receiver comprising an equalizer, a demodulator, and a modulator.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohsin (Ben) Benghuzzi whose telephone number is (571) 270-1075. The examiner can normally be reached Monday through Friday, 8:30am- 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mohsin (Ben) Benghuzzi January 19, 2007

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER